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OSI-SD/64-8  
August 1964

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**NOTICE**

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## SOVIETS DEVELOP NEW SHIP MODEL TESTING TECHNIQUE AND DEMONSTRATE A HYDRODYNAMIC PHENOMENON

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Defensive Systems Division  
OSI/CIA

The Soviets have developed a new ship model testing technique to investigate the effects of cavitating\* propellers upon the hydrodynamic interaction between the hull of a ship and its propeller. The work was reported at the 10th International Ship Model Towing Tank Conference held in London in September 1963 and displayed a great deal of ingenuity and originality. The Soviet authors are associated with the Krylov Central Scientific Research Institute of the State Committee for Shipbuilding in Leningrad.

The new testing technique consists of ventilating a propeller to simulate the thrust and torque characteristics of a cavitating propeller. Ventilation is accomplished by blowing air into passages which begin at the hub and end in a series of small holes along the leading edges of the blades. This technique is useful because it permits simulation of the action of a cavitating propeller behind a ship model in a towing tank. Correct reproduction of actual cavitation in model scale necessitates scaling down the absolute

\* Cavitation occurs when the pressure on a fluid becomes equal to or less than the vapor pressure of the fluid. On high speed propellers this frequently occurs in the water adjacent to the back or suction side of the propeller blade.

pressure or head of water on the model propeller by reducing the air pressure over the water in the towing tank building to below atmospheric. This cannot be achieved in conventional model basins. As a consequence, it has been impossible in the past to observe in model scale the interaction of a cavitating propeller and the hull of a surface ship.

Through use of the new testing technique, the Soviets were the first to demonstrate experimentally that one component of the interaction between the hull and its propeller, the so-called "thrust deduction coefficient," is drastically reduced and approaches zero for the case of a fully cavitating propeller. This result could have been predicted theoretically but had not been recognized generally. The U.S. Navy's David Taylor Model Basin recently conducted tests which verified this particular part of the Soviet report.

The Soviet paper may be a product of intensified research and development on high speed warships such as destroyer types and submarine chasers. A Soviet photograph of the stern of the model used in the experiments, together with data on the model's proportions, indicate that it was a model of a displacement-type hull similar to destroyers and

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submarine chasers. The Soviet discovery leads to the possibility of achieving somewhat higher propulsive efficiencies than previously anticipated, not only in destroyers and submarine chasers, but also in very high speed planing craft such as motor torpedo boats and, in

hydrofoil craft. In contrast to other navies, the Soviet Navy traditionally has emphasized achieving higher maximum speeds in surface warships, and the present work shows that this emphasis continues.

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SOVIETS REFUSE TO SUPPLY SATELLITE TRACKING DATA

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[REDACTED]  
General Sciences Division  
OSI/CIA

Soviet delegates of COSPAR objected to a proposed resolution which called on them to provide precise orbital information for the satellite Electron 2 so its beacon could be used for ionospheric studies. The Soviets insisted that they had not planned using Electron 2 as an ionospheric beacon satellite. Their objection indicates an unwillingness to declassify their electronic tracking data on Electron 2 and an inability to supply reliable optical tracking data.

Although the Soviets suggested that they were not in a position to supply good orbital information at all, they are believed to possess adequate electronic tracking data on Electron 2.

The Soviets refusal to provide optical tracking data indicates that the system has rather low performance and cannot routinely provide position data for distant satellites such as Electron 2, the apogee of which is about 42,000 miles. This agrees with current estimates of Soviet optical tracking capabilities. Electron 2 is at great distances from the earth most of the time when it is too faint to be observed with the standard Soviet NAFA 3s/25 satellite tracking camera. The Soviets apparently have not yet replaced this camera with a high performance instrument equivalent to the U.S. Baker-Nunn camera which could probably photograph Electron 2 at its greatest distance from the earth.

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## SOVIETS TO RELOCATE MAIN ANTARCTIC BASE

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[REDACTED]  
General Sciences Division  
OSI/CIA

The Soviet Union has announced plans to move its Antarctic exploration and research headquarters from the Mirny station to the present coastal observation post, Molodezhnaya, about 1300 miles to the west. The proposed relocation of Mirny was disclosed as part of the plans for the 10th Soviet expedition, scheduled to leave for the Antarctic in November 1964. The transfer will greatly benefit the Soviet program because of the less rigorous environment of the new location. It also will provide the Soviets with a more favorable base from which to investigate one of the last remaining major unexplored

areas of the Antarctic involving some 400,000 square miles.

Since its inception in 1955 the Soviets have been severely hampered in their research activities at Mirny because of unforeseen glacial activity, high winds and heavy drifting snows. The move out of Mirny is therefore not altogether unexpected. It is not likely however, that the Soviets will close down the station entirely since it is still the closest coast-based source of over-land supply for their two active inland stations, Vostok and Komsomolskaya.

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SOVIETS UNABLE TO PRODUCE  $Nb_3Sn$  IN QUANTITY

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[REDACTED]  
General Sciences Division  
OSI/CIA

The Soviets are unable to produce wire or ribbon of the intermetallic compound of niobium and tin,  $Nb_3Sn$ , in sufficient quantities and of suitable quality for the construction of high-field superconducting magnets. As a result, they are using niobium-zirconium alloys, which have inferior superconducting properties.\* Although the Soviets have made laboratory quantities, their inability to

\* The Soviets are also experiencing difficulty in producing long lengths of niobium-zirconium wire with consistent properties suitable for the fabrication of superconducting magnets.

produce large quantities of metallurgically homogeneous  $Nb_3Sn$  wire or ribbon is hindering their development of high-field superconducting magnets. Such magnets have potential nuclear, power generation, and materials research applications.

Long lengths of metallurgically homogeneous  $Nb_3Sn$  wire and ribbon currently are being produced in the West. However, a long development period was needed to overcome the production problems caused by the brittle nature of the compound. [REDACTED]

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THE DEVELOPMENT  
OF NONIMAGE-FORMING INFRARED DETECTORS IN THE USSR\*

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General Sciences Division  
OSI/CIA

SUMMARY AND CONCLUSIONS

Soviet research on thermal infrared (IR) detectors has been excellent. Many types have been developed and are used in science and industry. Pneumatic detectors of the Golay type and various bolometers and thermopiles are commercially available, as are evaporated film bolometers which are particularly useful in the construction of mosaic detectors. However, only a very limited military use can be made of these types of detectors because of their inherent properties of relatively low sensitivity and slow response time.

Although Soviet development of IR photon detectors for military applications apparently has lagged behind that of thermal detectors, the Soviets are now taking advantage of their outstanding and extensive materials research to develop the necessary semiconductor compounds. These developments make possible the construction of photon detectors for the entire IR region of the spectrum, extending into the millimeter wavelengths. There is evidence of the avail-

ability, although not of serial production, of germanium, gallium arsenide, silicon, and silver sulfide detectors for the 0.8- to 2-micron region, possibly of indium arsenide cells for the 2- to 4-micron region, and of lead telluride, lead selenide, and indium antimonide cells for the 3- to 5-micron region. Lead sulfide detectors for the 2- to 4-micron region have been in serial production for several years. There has been particular emphasis on the development of high-quality indium antimonide crystals. Likewise, an extensive research and development effort has been expended on the effects of a variety of impurities in germanium, particularly gold doping, and on the use of binary and ternary semiconductor compounds for detectors for the wavelength regions beyond about 5 microns. Much of this work has been concentrated at the Physico-Technical Institute imeni A. F. Ioffe of the Academy of Sciences, USSR, Leningrad, where actual detector development probably is also taking place.

Soviet success in the development of thermal detectors, which have widespread scientific applications and limited military uses, possibly delayed the serial

\* Reprint of Summary and Conclusions of OSI-SR 64-33, 4 August 1964, [redacted]

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production of the faster photon detectors for the 0.8- to 2-, 2- to 4-, and 3- to 5-micron regions until recently. Now, however, there are under active development photon detectors for the 8- to 14-micron region and beyond, extending into the very

far IR region, which provide capabilities for the passive detection of relatively cool targets. Soviet detectors probably are being deployed in military devices that utilize the IR spectrum out to about 5 microns. [REDACTED]

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## SOVIETS REJECT PROPOSED MEETING OF ARCTIC EXPERTS

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General Sciences Division  
OSI/CIA

The U.S. State Department recently proposed a meeting of U.S., Soviet, and Canadian Arctic experts to discuss plans for a cooperative Arctic scientific research effort. The Soviet Ministry of Foreign Affairs rejected the proposal and stated that "since scientific investigations of the Arctic are included within the program of the IQSY and, inasmuch as the results of these investigations are regularly exchanged through the World Data Centers in Moscow and Washington, such a meeting is not considered necessary at the present time."

The United States was prompted to

make the proposal by the encouraging response to the idea expressed privately by high level Soviet scientists at various international scientific meetings, and by its acceptance in principle by leading Soviet polar scientists-administrators, including Ye. K. Fedorov, Director of the Chief Directorate of the Hydro-meteorological Service. Its rejection by the Soviet Government is probably based on military security considerations and a consequent desire to avoid the disclosure of all Soviet Arctic research (much of which is military-associated) under the obligations of an exchange agreement. [REDACTED]

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## THE POLISH MISSILE AND ROCKET PROGRAMS\*

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Ballistic Missiles and Space Division  
OSI/CIA

### CONCLUSIONS

Poland has several rocket programs but no guided missile programs underway. The rocket programs are small and their objectives seem to be vague, even to the Poles. The civilian program suffers from a lack of centralized direction, and both the military and civilian programs suffer from inadequate financial support and a shortage of trained scientists and technicians.

Polish military objectives include the creation of a small native rocket technology and the establishment of a capability for the maintenance of Soviet-supplied missiles and rockets. Nonmilitary objectives include the development of meteorological rockets and the education of a cadre of scientists and technicians in rocket technology.

Poland has a fairly good capability for the development of a limited variety of small military rockets and missiles, such as air-to-air, antitank, surface-to-

surface, and air-to-surface types, if and when required. No information is available, however, to suggest that the Poles are now producing operational military rockets or missiles.

If adequate financial backing is provided, the Experimental Rocket Center of the Krakow Aeroclub, in conjunction with the Krakow Branch of the State Hydrology-Meteorology Institute will develop within the next 3 years an instrumented meteorological rocket with a vertical range of 30 to 35 nautical miles. The Poles have announced plans to measure high-altitude winds beginning in 1965 to an altitude of 19 to 21 miles for the International Year of the Quiet Sun (IQSY).

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\* Reprint of Conclusions and Summary of OSI-SR/64-27, 27 July 1964, [REDACTED]  
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### SUMMARY

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Poland did little research on rockets before 1956. [REDACTED]

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[redacted] Polish rocket research and development has been retarded by a lack of trained scientists and technicians, financial support, and centralized directing authority. Little has been done so far to solve these problems.

Basic rocketry research for military purposes is conducted under the leadership of Professor Zbigniew Paczkowski, head of the Chair of Mechanical Devices, Faculty of Production Engineering at the Warsaw Polytechnical Institute. Paczkowski and his co-workers are also associated with the military rocket research and development conducted by other organizations including the Jaroslaw Dabrowski Military Technical Academy, the Air Force Technical Institute, and the Aviation Research Institute, all of Warsaw.

The Chair of Mechanical Devices (known earlier as the Chair of Applied Mechanics) has conducted research on small liquid- and solid-fuel rockets, rocket test beds, plasma rocket engines of the arc type, the thermodynamics of combustion, and the steering and control of rockets. The first rocket developed by the Warsaw Polytechnical Institute's group was for meteorological purposes and reportedly was fired in mid-1958 on the Hel Peninsula. In 1963, students of this Institute designed a small solid-fuel research rocket with a 16.2-nautical-mile vertical range. Some laboratory work on infrared guidance of missiles has been conducted by a department headed by Major Josef Koszewski, under Paczkowski's Chair of Mechanical Devices, but there is no evidence that this

work ever evolved beyond the laboratory stage.

The Jaroslaw Dabrowski Military Technical Academy trains military engineers in the technology of analog computers, wind tunnels, reaction engines, rocket motor test stands, and so forth. In 1962 the Academy had a miniature rocket range where tests on low-powered liquid-fuel rockets were carried out. One low-thrust rocket engine designed by academy scientists was tested in the presence of a Polish newsmen in 1962.

The Air Force Technical Institute, though primarily concerned with the analysis of structural failure of aircraft and aircraft equipment, has conducted experiments with rocket engines in order to determine the causes of malfunction of air-to-air rocket engines.

The Aviation Research Institute is primarily concerned with the research and development of aircraft. However, in February 1959 a Rocket Engine Division was formed in this Institute, and in the spring of 1961 a two-stage solid-fuel rocket was under development.

In 1957, Dr Jerzy Wehr of the Institute for Basic Research (now known as the Institute of Fundamental Technical Research), Polish Academy of Sciences, was called on to test ultrasonically samples of what he believed to be Soviet solid rocket fuel. In 1962, Zdzislaw Pawlowski, an associate of Dr. Wehr at the same Institute, reported that on a regular and frequent basis Polish solid

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rocket propellants were tested in this Institute by ultrasonic means.

The Experimental Rocket Center of the Krakow Aeroclub is perhaps the leading organization working on meteorological-type rockets. This organization was started in 1956, initially under the joint sponsorship of the Polish Astronautical Society and the Ministry of Higher Education. The Experimental Rocket Center, since its formation, has designed at least six different types of rockets, and various modifications, of which all but a few were test-fired on Bledowska Desert, Olkusz.

In recent years the Experimental Rocket Center has been working with the Krakow Branch of the State Hydrology-Meteorology Institute on the development of meteorological rockets, specifically the RM-3W and the RASKO-1. The Poles have recently submitted plans to launch meteorological rockets to measure high-

altitude winds during the International Year of the Quiet Sun (IQSY).

Within the next 3 years these organizations should be able to develop an instrumented meteorological rocket with a vertical range of 30 to 35 nautical miles.

On 26 April 1960, the Managing Board of the League of Soldiers' Friends created a Rocket and Astronautics Technology Club in Warsaw. This was done at the instigation of Professor Zbigniew Paczkowski of the Warsaw Polytechnical Institute, who became the first head. Since then, branches of the club have been organized in Lodz, Krakow, and Katowice. The objectives of this club are to train youths interested in rocketry, to conduct the experimental building of rockets, and to organize special courses for interested adults on rocket and astronautical technology using lecturers from higher educational institutes.

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## PRACTICAL USE OF HUNGARIAN HIGH FREQUENCY TECHNIQUES

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General Sciences Division  
OSI/CIA

T. K. Sarkany, a Hungarian scientist, is working on a technique for improving the bandwidth characteristics which, in turn, could improve the performance of electronic measuring instruments, such as oscilloscopes, and permit more communications channels on existing telephone and microwave systems. The technique, which is valuable because of the ever increasing requirement to improve the message-carrying capacity of circuits, effectively reduces cross-modulation and its inherent noise characteristics to a minimum for microwave carriers.

Sarkany, who is affiliated with the Telecommunications Research Institute, Budapest, uses circuitry which samples the detected subcarrier; the sampled voltage is then utilized as a control voltage to provide variable delay equalization, which in turn, controls the phase modulation of the subcarrier. Sarkany has stated that his work has been con-

cerned with type GTT-4000, the 4000 Mc/s microwave relay equipment manufactured by Hungary.

If Sarkany's technique can be developed to the point where it can be generally used, it could increase by several fold the message carrying capacity of existing bloc telephone carriers and microwave communications equipment. Amplitude modulation without a frequency shift is as important in electronic measuring instrument development as it is in communications. In building these instruments, one of the major goals of amplitude modulated envelopes is to minimize the frequency shift of the modulations on the carrier. The Sarkany technique could materially improve the circuits used in such instruments, and thus improve the performance of Soviet electronic measuring instruments, such as oscilloscopes.

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## NEW CHILEAN ANTARCTIC INSTITUTE INAUGURATED

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General Sciences Division  
OSI/CIA

A recently created Chilean Antarctic Institute was officially inaugurated on 29 May 1964 at ceremonies in which high level members of the government, the armed services and the University of Chile participated. Chile's scientific activities in the Antarctic up to now have been woefully inadequate and have resulted occasionally in an embarrassing inability to participate effectively in cooperative international ventures. This inadequacy has stemmed, in part, from insufficient civilian participation in scientific program planning.

The announced functions of the institute are the planning, orientation, and coordination of Chilean Antarctic scien-

tific and technical activities, both private and governmental, and the coordination of these with the activities of other countries. It also is authorized to initiate and undertake independent scientific missions.

The Institute is directly subordinate to the Ministry of Foreign Relations and will be governed by a council composed of representatives of private and governmental organizations with interests in the Antarctic. The new arrangement reflects an attempt to strengthen Chilean research activities through closer coordination of scientific, political, and military interests. [REDACTED]

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FRENCH LAUNCH FIRST STAGE  
OF DIAMANT SATELLITE LAUNCHING VEHICLE

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Ballistic Missiles and Space Division  
OSI/CIA

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The first stage of the Diamant satellite launching vehicle was test fired for the first time in June 1964 from the Hammaguir test range. According to the French press, the propulsion worked very well but difficulties were encountered with the guidance system. Thus, the announced French intention to use the Diamant to place an uninstrumented satellite in orbit in late 1964 or early 1965 appears to be optimistic. In addition, testing at the Hammaguir range traditionally ceases for several months beginning in July due to adverse climatic conditions.

The first stage of the Diamant satellite launching vehicle is called Emeraude.

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The solid propelled second stage of the Diamant satellite launching vehicle is called Topaze. It has been successfully launched many times in the past two years, probably always with a dummy third stage of the Diamant.

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COMPUTER RESEARCH, TECHNOLOGY, AND USAGE IN SWEDEN\*

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General Sciences Division  
OSI/CIA

CONCLUSIONS

Sweden leads the Scandinavian countries in research and development of computers. Sweden is approximately on a par with France, but lags behind the United Kingdom and West Germany. The quality of Swedish work probably will remain high.

There are sufficient numbers of natively produced and imported computers in Sweden to meet essential military and civilian applications. Computers are used in Sweden for such military purposes as simulating guidance and control problems of military aircraft and study-

ing problems of aerodynamic heating and design of aircraft. The number of computers installed is expected to increase in the future.

Computers are, and will continue to be, used extensively in Sweden for data processing and scientific applications. Computers are also coming into use in Sweden for automation. At least one computer of Swedish design has possible application to process control, and an excellent machine tool control system has been devised.

SUMMARY

A unique Swedish development in the field of computers was the carousel memory,\*\* which was designed about five years ago. Since then no computer component as striking has been developed in Sweden, but valuable work has been

conducted on paper tape readers, a high-speed alpha-numeric output display, and a new circuit design for ferrite core memories.

A modest research program is being conducted in solid state devices, cryogenic techniques, and machine translation of languages. The research includes investigation of superconductive circuitry for use in computers. Both the Royal Institute of Technology in Stockholm and

\* Reprint of Conclusions and Summary of OSI-SR/64-26, 23 July 1964. [redacted]

\*\* Random-access type of magnetic tape storage.

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the Chalmers Technical Institute in Göteborg are participating in this work. A limited amount of basic research is being conducted on machine translation of languages, primarily at the Universities of Stockholm and Göteborg; major emphasis is on problems of grammatical structure and language statistics.

The two major manufacturers of computers in Sweden are FACIT Electronics Aktiebolaget (a division of Aktiebolaget Atvidabergs Industrier of Stockholm) and Svenska Aeroplan Aktiebolaget (SAAB). A third, Aktiebolaget Bo Nyman (ABN), specializes in special purpose devices and peripheral equipment. A fourth, the Standard Radio and Telefon AB, will probably be manufacturing computers by 1967.

Sweden now has about 65 digital computers installed and about 78 on order, plus an undetermined (but small) number of analog computers. About two-thirds of the computers in Sweden are imported, primarily from IBM. The emphasis Sweden places on computers is indicated by the ratio of those installed to the work-

ing population; only Switzerland has a higher ratio as of December 1961.

Computers are extensively used in Sweden in data processing and for various scientific and technical applications, including the solving of problems in design of aircraft structures, highway location, ship design calculations, electric power systems, telephone networks, and economics. Computers are coming into use in automation. One of the most important contributions to Swedish automation is a computer-controlled machine tool system which exhibits many advanced characteristics. This system was devised by SAAB. Data processing systems, mainly IBM, are used in government, banks, and insurance companies.

Analog computers are also used in Sweden. Like the digital machines, the major ones are imported from the United States. Both SAAB and the Chalmers Technical Institute have conducted some research in analog computers. SAAB has used analog computers to simulate guidance and control problems of military aircraft and to study various problems such as aerodynamic heating.

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## SOVIET P-4 CLASS MOTOR TORPEDO BOATS

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Defensive Systems Division  
OSI/CIA

The Soviet P-4 class motor torpedo boat is the fastest surface combat boat in the Soviet fleet. Many of these units have been sold to satellite nations, notably Cuba and Communist China.

The characteristics of the P-4 have been developed from information from many sources of uncertain reliability. This information has indicated that the P-4 is a very high speed stepped hydroplane -- a hull form of a type on which performance data are scarce.

A recently published Soviet photograph shows that the Soviet G-5 class motor torpedo boat of World War II was a stepped hydroplane. Reliable data on the performance of two versions of the G-5 are available in a captured World War II handbook on the characteristics of ships in the Soviet Baltic Fleet. (See Figures 1 and 2.) These data, when compared with reported and estimated data on P-4, tend to confirm the estimates on P-4 and indicate that P-4 is a development of the G-5.

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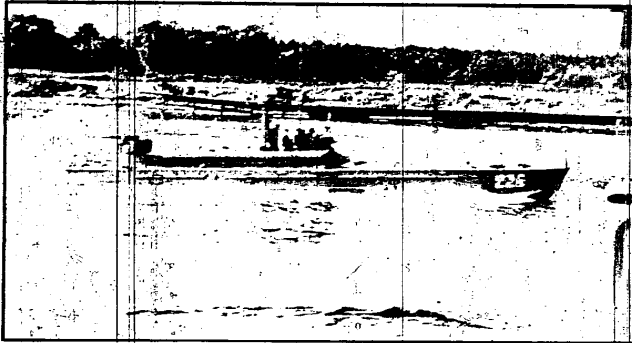


Figure 1. Soviet P-4 Class Motor Torpedo

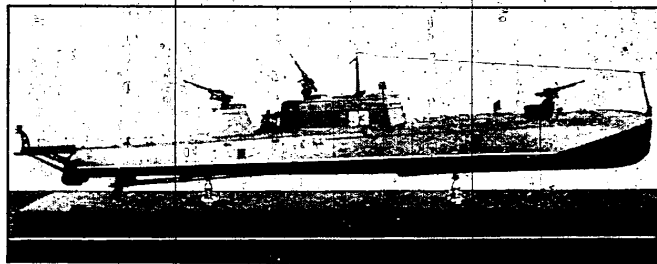


Figure 2. Model of Soviet Torpedo Boat "G-5"

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NOTES

SOVIET AIRCRAFT DESIGNERS NOMINATED  
TO UKRAINIAN ACADEMY OF SCIENCES

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[REDACTED]  
Defensive Systems Division  
OSI/CIA

Aleksandr Georgiyevich Ivchenko, a leading Soviet engine designer, and Oleg Konstantinovich Antonov, a well-known Soviet aircraft designer, have been nominated to the Academy of Sciences, Ukrainian SSR.

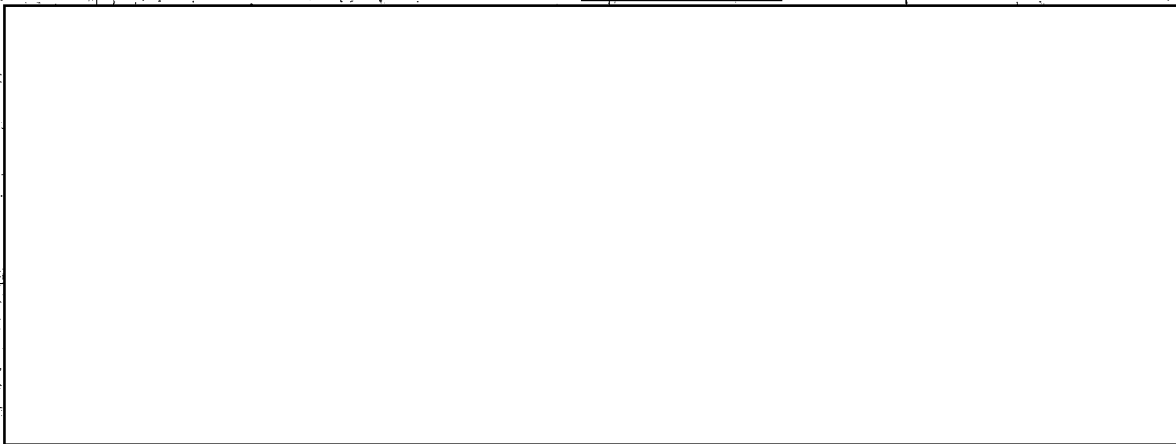
Ivchenko, who designed the AI family of Soviet aircraft engines, has been nominated as an Academician. His most recent design has been the AI-20 and its variants, used in the IL-18, AN-10 and AN-12 aircraft. His latest efforts have been devoted to investiga-

tions on extending the life span of Soviet aircraft engines.

Antonov, who has designed gliders, agricultural aircraft, military transports and airliners, has been nominated as a Corresponding Member of the Academy. He has emerged within the last few years as a leading spokesman for improvements in the overall Soviet industrial system and in Soviet aeronautical engineering education. He has been critical of the short life span of Soviet aircraft engines. [REDACTED]

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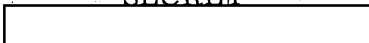
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IMPROVEMENTS IN EAST GERMAN RADIO PROPAGATION RESEARCH

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General Sciences Division  
OSI/CIA

Increased emphasis on radio propagation research in East Germany is expected to improve their communications services. This research effort, essential for development and operation of the communications services, is revealed in a recent publication of the work of the Radio and Television Central Office (RFZ) of the East German Post Office.

Two laboratories in Kolberg are engaged in radio propagation studies

necessary for planning of frequencies, transmitter powers, and station locations. The work includes monitoring and analysis of radio transmissions covering a wide range of wave bands for point-to-point communications, broadcast, and television services. During the last few years most of the effort has been concentrated on the low frequency and medium frequency bands. Next year more emphasis will be placed on the high frequency band [REDACTED]

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SOVIETS CLAIM DEVELOPMENT  
OF VERY ACCURATE MARINE MAGNETIC COMPASS

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General Sciences Division  
OSI/CIA

The Soviets have developed a marine magnetic compass that can be read to an accuracy of 0.005°, according to an article in a 1962 issue of the Transactions of the Marine Hydrophysical Institute. The article stated that the compass was designed specifically for

submarine navigation, navigation at high latitudes, and during ship maneuvers. Although an accurate magnetic compass might be a useful research device, it would have serious limitations for navigation. [REDACTED]

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SOVIET ACADEMIC COURSES SHORTENED

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[REDACTED]  
Life Sciences Division  
OSI/CIA

An abstract of a 21 June Pravda article by Vyacheslav Yelyutin, Minister of Higher Education, states that the Soviets are shortening training periods in several fields. Most courses according to Yelyutin will be cut from 5½ to five years. Law and some other studies will be reduced from five years to four and in some branches of medicine the course will be cut from six to 5½ years. The course for agricultural specialists would be cut by eight months giving students a chance to be graduated in

time for spring work in the fields.

The Soviets claim that the shortening of training periods was made possible by "improved teaching methods." These could possibly include programmed instruction methods and the use of teaching machines in Soviet tutorial processes. Nevertheless, the possibility of an "economy drive" in education and the elimination of "on-the-job training" could be the major factors involved. [REDACTED]

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## TWO NEW SOVIET AGROCHEMICAL JOURNALS

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Life Sciences Division  
OSI/CIA

In an effort to encourage and provide a greater opportunity for publication of research results connected with the use of agricultural chemicals, the Soviets have begun publishing two new scientific journals devoted to agrochemical research. Publication of relevant agrochemical research is one of the measures taken by the Soviets in an attempt to improve agriculture by scientific innovations. The journals, Khimiya v Sel'skom

Khozyaystve (Chemistry in Agriculture) and Agrokhimiya (Agrochemistry), are monthly publications and cover agrochemical research, from educational and research institutes and agriculture experiment stations. These journals will be especially useful to the higher educational institutes which previously have had only a quarterly journal devoted to the biological sciences. [REDACTED]

## NATIONALIST CHINESE VOTED PROVISIONAL MEMBERSHIP IN INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS

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[REDACTED]  
General Sciences Division  
OSI/CIA

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The USSR offered little resistance to the recent acceptance of Nationalist China as a provisional member of the International Union of Geodesy and Geophysics (IUGG). Communist China has stated that it would not apply for membership if the Nationalist Chinese were admitted. In the past the USSR has blocked Nationalist Chinese admission to the IUGG. The present attitude on the part of the USSR and bloc countries probably reflects the current political tension between the USSR and Communist China.

Results of recent balloting among member nations of the IUGG on the admission of applicant nations were tabulated and approved at the 5-8 May meeting in Moscow of the IUGG Bureau. Admission rules were discussed in the Bureau, but apparently no strong effort was made by the USSR to block the Nationalist Chinese entry. Three controversial applicants, among others, were admitted provisionally after receiving a favorable ballot as follows:

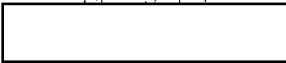
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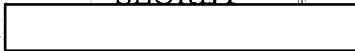
Republic of China	26 for	9 against	4 abstentions
North Korea	17 for	10 against	12 abstentions
German Democratic Republic	15 for	13 against	11 abstentions



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OSI-SR/64-26, Computer Research, Technology, and Usage in Sweden, 23 July 1964, [REDACTED]

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OSI-SR/64-27, The Polish Missile and Rocket Program, 27 July 1964, [REDACTED]

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OSI-MP/64-3, Electronic Research and Development Facilities in Shanghai, 1 August 1964, [REDACTED]

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[REDACTED]

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[REDACTED]

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